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JPRS-UAG-86-005

12 February 1986

USSR Report

AGRICULTURE

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MAJOR CROP PROGRESS AND WEATHER REPORTING

SOYBEAN HARVEST DELAYS IN AMUR OBLAST

Moscow SELSKAYA ZHIZN in Russian 17 Oct 85 p 1

[Article by Yu. Baklanov, SELSKAYA ZHIZN correspondent, Amur Oblast: "Soybeans Cannot Wait"]

[Text] The weather in the Amur Area is warm and sunny. It enables machine operators to complete the set of field operations, the most important of which are soybean harvesting and fall plowing.

On the Vostok Kolkhoz in Tambovskiy Rayon tractor and field cropping brigades quickly completed soybean threshing on the eve of the occupational holiday of agricultural workers. At the central farmstead in the village of Zharikov the flag of labor fame was hoisted in honor of the best combine operators N. Yegorov, G. Popov and V. Kozlov. They were the first to thresh about 2,000 quintals of soybeans and overfulfilled shift norms more than twice every day.

I visited the farm when in V. Bezborodov's brigade "Siberians" worked on the last hectares. Crops streaked with gilt were clean and had full beans. It was apparent immediately that machine operators worked quite a lot with land and herbicides in order to attain a good result. Despite climatic adversities it is good. Combine operators threshed more than 13 quintals of oil seeds per hectare with a plan of 12.5. Owing to the advanced brigade, on the average, on the kolkhoz the soybean harvest is also one of the best in the oblast. Farmers expect to obtain no less than 10 quintals of grain per hectare on an area of 3,800 hectares.

Field crop growers on the Znamya Kolkhoz, on the experimental production farm of the All-Russian Scientific Research Institute of Soybeans and on the Partizan Sovkhoz have the same result. Harvesting is also being completed on the latter. At the same time, machine operators are preparing the future harvest. They plow for winter fallow at accelerated rates and apply mineral fertilizers to fields. In Bezborodov's brigade three units cultivate the early fall field according to the type of bastard fallow. This will make it possible to begin the sowing of grain crops immediately after harrowing in spring without losing a single day.

Now the main task for farmers is to take the harvest before the arrival of snow falls and without losses at that. Together with the people of Tambovskiy

Rayon machine operators in Shimanovskiy and Zavitskiy rayons have set the tone in this work. However, in the oblast as a whole, unfortunately, the rates of harvesting and fall plowing are not high. To this day many combines are in shops and at machine yards. Their repairs are delayed owing to the shortage of spare parts. On the Novoilinskiy Sovkhoz in Oktyabrskiy Rayon from the beginning of harvesting only two out of nine combines have been taken out to the field. Machine operators complain about the low quality of repairs in the rayon agricultural equipment association and machines have to be made operative in the localities. However, not everyone succeeds in this.

At times a lack of ordinary administrative ability and miscalculations in labor organization hamper work. On the Vinnikovskiy Sovkhoz in Mikhaylovskiy Rayon plowmen instead of specialists themselves seek fields for work and lose expensive time. The method of control threshings, which has proved its value on the Pogranichnyy Sovkhoz in Konstantinovskiy Rayon, has not become widespread.

Mikhaylovskiy Rayon, one of the largest, has proved to be among the lagging ones in harvesting. On a number of farms on flood plain land in the Amur harvesting and fall plowing have been delayed owing to the water-logging of fields and Kirovtsy with plows are still laid up here. At times caterpillar equipment is not used properly owing to constant fuel stoppages. Only one-half of the daily fall plowing assignment is fulfilled by the rayon. An especially large volume of work is to be done on the Chesnokovskiy Sovkhoz, where the soybean field is the vastest not only in the rayon. It occupies 7,250 hectares of arable land.

"Every morning begins with telephone calls from rayons: When will there be diesel fuel?" Ye. Kiselev, chief of the oblast administration of agriculture, stresses. "On most sovkhoses and kolkhozes filling up is done literally from wheels. If not for diesel fuel stoppages, we could annually plow several thousands of hectares of the fall field more than now."

Petroleum refiners in Irkutsk Oblast failed to deliver a great deal of the allocated diesel fuel to the oblast. The RSFSR State Committee for the Supply of Petroleum Products and the republic's Ministry of Agriculture know about this, but do not yet take effective measures. After all, not only a day, but also an hour, is now dear to grain growers. At the end of October cold weather will strike and tractors with plows will have to be stopped.

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CSO: 1824/099

MAJOR CROP PROGRESS AND WEATHER REPORTING

PROBLEMS IN ATTAINING ABUNDANT SOYBEAN HARVESTS

Moscow SELSKAYA ZHIZN in Russian 11 Oct 85 p 2

[Article by V. Kuzin, director of the All-Russian Scientific Research Institute of Soybeans: "Troubles of the Soybean Field"]

[Text] In the solution of the protein problem much importance is attached to an increase in soybean production. This is natural. After all, its grain contains up to 45 percent of high-quality protein including all the most important amino acids, as well as 22 to 24 percent of fat and a big set of vitamins and mineral salts.

Unfortunately, the solution of this problem is hampered by low soybean harvests due to two reasons, that is, an insufficient volume of research and, at the same time, a slow and incomplete introduction of scientific developments into production.

The soybean program approved by the decree of the USSR State Committee for Science and Technology in 1979 envisaged an overall solution of the problem with the participation of many institutions of the USSR Ministry of Agriculture, the All-Union Academy of Agricultural Sciences imeni V. I. Lenin and the Ministry of Tractor and Agricultural Machine Building. However, it was not financed purposefully. Therefore, research is not performed in a full volume. As a result, the sector's insufficient scientific support has become the reason for the slow expansion of sown areas in new regions and for the low efficiency of production of this valuable crop.

Varieties adapted to certain natural-climatic conditions are the basis for a successful cultivation of soybeans. Our institute's breeders have developed a number of early maturing, highly productive and cold-resistant varieties for every microzone of the Far East. They also ensure a high productivity in the country's European part, especially in irrigation. The areas under varieties of the selection of the All-Union Scientific Research Institute of Soybeans comprise 58.2 percent of the sown areas.

The experience of advanced farms, brigades and links points to the possibility of realization of the high potential of varieties in production. The Pogranichnyy Sovkhoz in Konstantinovskiy Rayon, the Partizan Sovkhoz in Tambovskiy Rayon and the experimental model farm of the All-Union Scientific

Research Institute of Soybeans in Amur Oblast annually obtain 14 to 16 quintals of soybeans per hectare on a big area. For comparison I would like to note that soybean crops in Moldavia occupy 13,500 hectares and the average harvest is 7 to 11 quintals and in Kazakhstan, 1,300 hectares and 7 to 9.8 quintals respectively.

Eleven soybean varieties have been developed during the current five-year plan. Out of them the Aurora variety has been regionalized and Rassvet has been recognized as promising for all zones in Amur Oblast. According to state strain testing data, it also shows good results in Khabarovsk Kray, Novosibirsk, Kurgan and Ryazan oblasts, the Volga Area and the Ukraine.

For the further development of selection work it is necessary to staff the selection center for soybeans in accordance with the standard structure, which will make it possible to expand and intensify research on cold hardness, immunity, resistance to acidity, genetics, physiology and biochemistry.

In our Far Eastern zone soybeans are grown under complex soil and climatic conditions. A shortage of moisture is observed at the beginning of vegetation and its surplus, in the second half of the summer. The sum of active temperatures ranges from 1,600 to 2,200 degrees and the bioclimatic potential is not high. In the set of agrochemical indicators arable soil pertains to weakly cultivated soil and more than 70 percent has an increased acidity.

The sharp expansion of areas sown with soybeans in Amur Oblast during the 8th and 9th Five-Year Plans led to their two-course rotation with grain crops and often to continuous sowing. The haphazard management of farming, shortage of material and technical facilities and nonfulfillment of the set of weed control measures led to the weediness of fields, a negative balance of organic substances and soil acidity. This hampers the growth of harvests, which, on the average, do not exceed 5 to 7 quintals. An increase in soil fertility on the basis of the introduction of farming systems and crop rotations developed for the region's every microzone is the most important farming problem in the Far East.

The results of work of advanced workers and scientific research show that the attainment of a good harvest on acid soil is possible only with an overall utilization of chemical reclamation agents and mineral fertilizers. However, the volumes of liming encompass only one-third of the land and, essentially, do not grow. In Amur Oblast in 1976 lime was applied on 83,900 hectares, in 1980, on 89,500 hectares and in 1984, on 78,600 hectares. As a result of the low rates of liming with the increased volumes of application of mineral fertilizers, according to the data of the Dalgiprozem Institute, soil acidity increased there by 0.2 to 0.3 pH as compared with the 1960's.

The increase in the amount of mineral fertilizers and herbicides was not accompanied by an allocation of technical facilities for their application. For example, fertilizers produce the greatest effect with localized band application at the depth of 10 to 15 cm, or at least when applied to a tilled area. However, only about 10 percent of the fertilizers are applied in this way. On most farms the basic amount of mineral fertilizers is applied shallowly, by the spreading method, or in an increased dose to a row during

sowing, which lowers their effectiveness and contributes to an intensive growth of weeds. Owing to violations in technology and the slow rates of liming, the return on fertilizers, despite the increasing volumes of their application, is two-thirds or one-half of the estimated return.

Owing to the severe weediness of fields, the soybean harvest is annually lowered by 30 to 70 percent. The periodic water-logging of seasonally frozen soil does not make it possible to intensively control weeds by agrotechnical methods. It is possible to solve the problem by using an integrated system including agrotechnical, mechanical and chemical methods. However, the need for herbicides is met in an extremely insufficient manner.

The results of work of the experimental model farm and advanced farms in the zone indicate that the introduction of industrial technologies of soybean cultivation on a smooth surface and on crests and ridges is the main way of increasing the soybean yield. However, owing to the shortage of material and technical facilities and low technological discipline, on the average, the completeness of introduction of such technologies comprises about 60 percent. On most farms in the zone a number of industrial technology links fall out: Either herbicides or fertilizers are not applied, liming is carried out on a small area, there is a shortage of land prepared in fall, crop rotation is not observed and the schedules of performance of technological operations are disrupted. Instead of 10 days sowing lasts twice as long and harvesting drags out for 30 or 35 days.

With a nonoverall introduction of industrial technologies the applied methods "do not work," expenditures are not recovered with the harvest, production costs increase and labor productivity drops. The poor-quality and untimely fulfillment of most technological operations is due to a significant extent to the lack of a set of specialized machines, as well as to the shortage of series equipment for the application of fertilizers and herbicides and for the care of crops. In Amur Oblast alone there is a shortage of over 500 K-701 tractors, 700 boom sprayers and 300 APZh-12 machines for the preparation of toxic chemicals.

With due regard for the soil and climatic conditions in the zone and crop requirements the All-Union Scientific Research Institute of Soybeans and the Far Eastern Scientific Research Institute of Agriculture developed sets of machines for soybean cultivation on a smooth surface and on crests and ridges. Our institute's set includes a MKP-4 multiple-unit machine for presowing soil cultivation and localized band fertilizer application, a PZhU-2.5 unit for herbicide application, SPS-12 and SPS-24 soybean seeders, a KBN-10.8 hitchless cultivator, a low-cut header, a PS-5 pneumatic separator, a NTKh-20 slow-moving noria and a KOZ-20 seed cleaning flow line. In its technical and operational indicators the set surpasses the series set 1.6-fold and makes it possible to lower expenditures by 35.8 percent.

The Far Eastern Scientific Research Institute of Agriculture developed a set of machines for the cultivation of soybeans on crests and ridges, that is, a SG-12 cultivating drill, BPK-0.35 weeders and attachments for series combines for harvesting on a graded surface.

The industrial production of machines should begin as early as 1983. Agrotechnical requirements were developed in advance, experimental models were devised, their economic check was carried out and recommendations were given to head design organizations in Kirovograd, Rostov-on-Don, Voronezh and Lvov. However, the scheduled dates for the development and industrial mastering of the soybean complex are not fulfilled, just as problems of liming and of the allocation of herbicides, fertilizers and mechanization equipment in a full need for the introduction of industrial technology are not solved by appropriate ministries and departments.

For a successful solution of urgent problems it is important to promptly prepare an overall program for the pursuance of scientific research and the development of soybean cultivation during the 12th Five-Year Plan, to ensure its purposeful financing and to establish under the All-Union Academy of Agricultural Sciences imeni V. I. Lenin or the Main Administration of Science of the USSR Ministry of Agriculture a council for the purpose of coordinating work and controlling the fulfillment of the program throughout the country.

Along with the long-term plan for scientific and experimental design work it is necessary to formulate a realistic program for the introduction of scientific developments specifically for each zone with an allocation of the necessary material and technical resources.

To increase the efficiency of scientific developments and the responsibility for the fulfillment of the recommended technologies, we consider it advisable to have on all farms organizational and technological plans, on whose fulfillment the same requirements as on plans in construction should be placed.

As the results of scientific research and the experience of advanced farms show, the implementation of these measures will make it possible to increase the soybean harvest in the Far East to 10 or 12 quintals per hectare, that is, to double it as compared with actual results.

It is necessary to pay more attention to an expansion of soybean crops in a mixture with other crops for feed purposes. The green mass of soybeans is rich in protein, fat and mineral substances. One quintal of this mass contains 3.5 to 4.2 kg of digestible protein, or three to four times more than that of corn.

The introduction of combined sowings of corn with soybeans on an area of 8.5 million hectares (50 percent of silage corn) will make it possible to additionally obtain about 1.3 million tons of digestible protein without an expansion of sown areas.

An extensive introduction of this valuable protein crop into agricultural production will make it possible to reduce the shortage of feed protein in the country.

11439
CSO: 1824/099

LIVESTOCK

DEPUTY MEAT, DAIRY INDUSTRY MINISTER ON RESOURCE MANAGEMENT

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 20 Oct 85 p 2

[Article by A. Ignatenko, Deputy Minister of the USSR Meat and Dairy Industry: "Thrifty Utilization of Resources"]

[Text] The collectives of the meat and dairy branch with intensified labor welcome their current occupational holiday, ensuring a successful completion to the 11th Five-Year Plan. From the very start of this year, hundreds of thousands of tons of food products, meat, sausage, milk, butter, and cheese were manufactured over and above the plan, valued at more than 600 million rubles. They are overfulfilling the plan for growth in the productivity of labor and reducing the cost of production. They are successfully fulfilling their adopted obligations to work two days to economize on raw materials, fuel and other materials.

Deserving special recognition are the collectives of the Moscow Oblast association of the meat industry, the Tbilisi dairy industry association, the Kharkov and Donetsk meat combines, the Minsk meat processing plant, the Leninakan meat cannery and many others. Eighteen advanced enterprises were victorious in the All-Union Socialist Competition and were awarded the All-Union Challenge Red Banners of the CPSU Central Committee, the USSR Council of Ministers, the All-Union Central Trade Union Council and the Central Committee of the All-Union Lenin Young Communist League for the work results of 1984.

But even today, on the day of our industry's holiday, it would be wrong to rest on our laurels. Recently the decisions of the last CPSU Central Committee October Plenum were published. Soon discussion will commence on the plan for "Fundamental Trends in the Economic and Social Development of the USSR" from 1986-90, and for the period up to the year 2000. Workers in the meat and dairy industry, as in other branches of the national economy, must raise the productivity of labor to a new, significantly higher level. There are many problems before us. But I'd like to speak about one, which has especially great importance for our industry. This is the economical and rational use of raw materials, about the struggle with losses, many of which still exist in all stages of production. This is especially important now that agricultural workers are redoubling their efforts to fulfill the food program. The volume of sales of cattle and poultry to the state is currently projected to be 2.5 million tons and milk 9.2 million tons more than three

years ago when the program was undertaken. Losses often begin at the first stage, from the farm to the processing plant. This is why the advanced collectives are striving to strengthen industrial ties with the kolkhozes and sovkhoses within the framework of agroindustrial enterprises. Wherever sufficient attention is paid, harmony reigns. Work has become more clearcut, and work schedules are being adhered to in delivering cattle and poultry to the meat and dairy combines. Cooperation as partners in the work to raise the quality of the products of animal husbandry has been strengthened.

One of the important trends of such cooperation is the acceptance of cattle, poultry and milk directly from the farms and hauling them in specialized motor vehicles of the industrial enterprises. The newspaper SOTSIALISTICHESKAYA INDUSTRIYA has already written about this progressive work method.

Now 40 percent of the farm products are accepted directly at the kolkhozes and sovkhoses. The task is to switch over completely to centralized hauling by the end of the next five-year plan.

Another equally important way to use raw materials economically is to increase the quality of our manufactured products, to combat waste and to decrease the range of grades.

Our branch has many collectives which constantly manufacture good products such as the Kolomna, Voroshilov, Vilnyus, Minsk, and Temirtau meat combines, the Leningradskiy cheese plant in the Krasnodar Kray and many others.

However, we must recognize that the quality of sausage, cheese, kefir and several other products does not always respond to the growing demand. Increases in the production volumes of these products are often not accompanied by improved consumer features. More often than not, when there is a critical raw material problem, several collectives put out products that do not meet the requirements of the standard technical documentation. Workers from the Main Administration of State Quality Inspection of Goods and State Trade Inspection, for example, condemned the sausage products from the Orlov association and from the Chita, Chardzhou, Osh, Przhevalsk and other meat industry enterprises.

I would like to emphasize that there are collectives which, for example, work under backwards conditions and still produce good quality, tasty products. This means that everything depends on the people. It depends on the party and trade union organizations, the economic managers and on all specialists and workers.

In the campaign to cut losses, the increase of product quality and the creation of low by-product and wastefree technology, an important role is played by the branch scientific research institutes. Their associates have done a great deal, in

particular, to stimulate industrial technological processes in the making of basic types of cheese: Soviet, Edam, Kostromskiy and Russian. There are other interesting developments. But still the contributions of scientists and designers in solving the branch's problems are still inadequate. Little basic work is carried out aimed at improving the quality of products.

Laboratory analysis to determine the fitness of milk to be used to make cheese, for example, takes 72 hours. This means that when we get the results the cheese has already been processed. Express methods are needed to determine the quality of the raw materials and the finished product. An important question for all branches is the automation of processes and the mechanization of labor-intensive work.

The party and the government are doing much to develop an industrial and technical base. During the current five-year plan construction and modernization will take place on about 300 meat and dairy industry enterprises. Already in operation are new meat combines in Omsk, Samarkand, Elista and the Voznesenskiy cheese plant in the Nikolayevsk Oblast, the canned dairy products combine in Sibay in the Bashkir ASSR and many others.

Enterprises, scientific organizations and all managerial offices are now concluding development of an integrated program to accelerate scientific and technical progress. Its purpose is to become the decisive factor in the branch's transition to an intensified method of development and to its reequipping. We plan to expand the fruitful scientific and technical cooperation and mutual exchange of information with all member countries of the Council for Mutual Economic Aid.

By completing the 11th Five-Year Plan with an all-out labor effort, the collectives of the meat and dairy industry enterprises have adopted high socialist obligations for 1986 the first year of the 11th Five-Year Plan. They plan to exceed the control figures. There is no doubt that the branch's workers will multiply their achieved labor successes and with great merit will greet our own 27th CPSU Party Congress.

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CSO: 1824/79

AGRO-ECONOMICS AND ORGANIZATION

GEORGIAN MINISTER DISCUSSES LIVESTOCK SECTOR ECONOMIC MANAGEMENT

Tbilisi ZARYA VOSTOKA in Russian 15 Nov 85 p 3

[Article by Aleksandr Movsesyan, Georgian SSR minister of the Meat and Dairy Industry: "Through the Prism of Finances"]

[Text] Laying a foundation for a radical change toward intensiveness and quality--this is the main thesis of the draft of the USSR Basic Directions of Economic and Social Development in 1986-1990 and in the Period to the Year 2000. It is in this direction that the collectives of our enterprises must begin their energetic work during the 12th Five-Year Plan. It must be said that already today we are purposefully implementing the restructuring of economic activity, giving priority attention to its improvement and to an economic and efficient utilization of raw materials and mechanisms.

In our work we allocate a great place to strengthening contacts with the republic's agricultural organs. Our ties with village party rayon committees and the RAPO [Rayon Agroindustrial Association] have become more effective; after all, the success of common goals depends on our branches. This affects results--a rhythmic pace of meat and milk deliveries and of their above-plan procurement are achieved.

We are utilizing technical innovations more effectively. For example, in its daily activity, the ministry's administration is profiting from data from the Myasomolprom [Meat and Dairy Industry] ASU [Automatic Self-Service Information Unit] system, which enables it to acquire the latest information on the quantity of procured raw materials, on production volume and so forth. This will provide the opportunity to take efficient measures based on the situation as it develops.

A great deal has also been done to strengthen the material-technical base. Dozens of branch enterprises have been renovated and many have been reequipped.

Joining the enterprises already in operation were the cheese and butter plant of Telavi, the Dushetskiy, Dmanisskiy and Tiapetskiy livestock processing

plants and the first stage of a freezer at the Tbilisi Meat Processing Plant. The Borzhomskiy and Samtredskiy meat combines, the Tetrtskaroyaskiy and Bogdanovskiy livestock processing plants, Kutaiskiy Milk Combine, Tskhinvalskiy Milk Plant, the Akhalkalakskiy and Tsalkskiy cheese and butter plants and others have been renovated with a significant increase in production capacities.

The development of the branch's material-technical base was facilitated to a large degree by the decisions of the May 1982 Plenum of the CPSU Central Committee. In implementing these decisions with the support of union ministries in cooperation with the RAPO, during the last 2 years alone we have built a number of dairy and livestock-processing enterprises which bring the processing of raw materials closer to the place where they are produced. Milk reception points have been opened in Chokhatauri, Tsalendzhikha, Khobi and Tsulukidze. Work is being carried out to equip large objects such as Zugdidskiy Meat Combine, Goriyskiy Milk Plant, Akhaltsikhskiy Cheese and Butter Plant and the second stage of the freezer of the Tbilisi Meat Processing Plant.

At the same time, an analysis of the use of capital investments during the current five-year plan shows that most of the resources were spent on renovation and technical reequipping. As follows from the Basic Directions, this is the best course to take. It will be continued on a large scale during the 12th Five-Year Plan as well.

The key to dealing with many problems lies in accelerating the introduction of achievements of scientific-technical progress as well as of our efficiency experts and inventors. By the way, they have introduced a considerable number of innovations. Let me give several examples that illustrate their work. The automatic machine to squirt out sausages developed by innovators enabled Tbilmyaso [Tbilisi Meat Production Association] to free six people. Here annual savings equals about 40,000 rubles. Here is another example. The use of a carousel-type thermal unit developed by inventors enabled the enterprise to free five persons, to double productivity in previous production areas and so forth.

We cooperate closely with collectives of scientific-research institutes. This allows us to successfully deal with the many problems associated with the so-called thorough processing of raw materials and with the acquisition of additional resources. For example, today our enterprises have begun work on obtaining protein from grape seed and on the production of dry whole-milk substitute according to a special technology. This complex of measures yielded 15 million rubles, which is four times more than during the same period in the 10th Five-Year Plan.

To our considerable achievements we can add the fact that production output per ton of milk and livestock significantly exceeds the average union indicator in our enterprises.

Thus, whereas in 1980 the volume of production output of processed livestock comprised 1,812 rubles, by the end of this year it will reach 1,920 rubles. The use of bones for food purposes has increased to 38 percent of bone

resources and will reach 70 percent. The use of subproducts of the second category for industrial processing increased from 30.1 percent to 82.5 percent, and so forth.

A similar situation has been observed in dairy farming as well, where the industrial processing of whey has reached 80.4 percent; a number of branch enterprises have assimilated waste-free technology. By 1989 it is planned to introduce this type of technology in all enterprises.

In this way dynamic growth is achieved for all indicators. Moreover, this was achieved totally by means of increasing labor productivity. Our collectives are working with special success this year.

As of 1 December the ministry will fulfill its annual goal and by 15 December--the five-year plan. According to results for 10 months, the commodity production plan has been overfulfilled by 22,418,000 rubles and sales--by 25,354,000 rubles. With a growth pace of 105.7 percent in commodity production growth in labor productivity reached 106 percent; for the five-year plan these figures are 104.2 and 106.4 percent respectively.

In other words, the entire growth in volume of commodity production has been achieved during the current five-year plan with fewer labor expenditures and with fewer workers. Here it is difficult to overestimate the role of brigade contracts, which were utilized by the overwhelming majority (93 percent) of branch workers.

The time has come to evaluate the achieved results through the prism of finances. It is no secret that the financial condition within a branch reflects the results of all economic activity because finances are a more large-capacity evaluative indicator of the effectiveness of our work.

Thus, let's talk about finances. We know that the main source of income of an enterprise is profits. Here the plan is fulfilled with a consistency that is worthy of approval. We expect that the annual target as concerns profits within the ministry's system will be overfulfilled by 2.5 million rubles. It should be said that we are trying to focus most of the attention of directors of enterprises on profits. This indicator is the subject of special concern of the ministry apparatus. After all, the fulfillment of the profits plan provides the foundation, so to speak, for the successful fulfillment of budget obligations. Last year the goals for this indicator were fulfilled by 128 percent and this year the figures will be much weightier. According to preliminary data, the annual plan for budget payments will be overfulfilled by 3 million rubles.

Another important financial factor is debit liabilities. Here the following form of work has developed. The ministry annually confirms the assignment to cancel debit liabilities on a quarterly schedule. Prior to developing semi-annual and annual bookkeeping balances and accounts seminars-meetings of senior bookkeepers are usually carried out; the condition of accounts, account-keeping and accounts discipline are discussed, shortcomings in these matters are discovered and ways to eliminate them are indicated. Naturally, the greatest amount of attention is given to cancellation of debit

liabilities. Thanks to this, last year the debit liabilities of branch enterprises decreased by 41.4 percent. This year many enterprises within the system have completely eliminated them.

An equally effective battle is being waged against non-production expenses and unplanned losses. As a result of an order, permanent work groups have been created in the ministry, in associations, enterprises and organizations for the purpose of investigating all cases of non-production expenditures and inefficient use of state resources, of discovering the guilty parties and of developing measures to prevent wasteful expenditures.

For example, during the first 6 months we were able to decrease non-productive expenditures and to lower unplanned losses by 28.3 percent as compared to the same period last year.

Extensive work has been done to successfully introduce progressive forms and methods of account-keeping and standard forms for initial accounts documentation. With this aim, a commission has been created within the ministry; it carries out its responsibilities according to a strict plan schedule. Through the efforts of a central ministry bookkeeping office, consultations are offered on a local level as concerns the question of organizing bookkeeping accounts and reports and the introduction of standard primary documentation.

The results of financial-economic activity in each individual enterprise based on the results of annual reports are examined by a balance commission from the ministry, and the results of revisions of financial-economic operations---everything without exception---are examined at board meetings. The entire balance commission makes an on-site examination when it evaluates the results of financial-economic operations based on annual results.

The use of working capital of enterprises is under similar strict control. The primary purpose of this capital, as we know, is to achieve an uninterrupted process of production and sales of products by providing financial resources. The availability of working capital in the ministry as a whole is on the level of established norms. The shortages that develop in individual enterprises as a matter of course are replenished by means of redistribution.

Today throughout the branch an above-norm surplus of commodity-material values not credited by the bank are not included in the balance. Credits are planned by us in advance and the enterprise is notified. All of this has enabled us to achieve financial stability and to decrease overdue loans to a minimum. In addition, credit sanctions have not been used by Gosbank against any enterprise within our system.

The question of price formation also cannot be separated from all these other questions. We have a price department which controls adherence to discipline, prices and the price industry, which has its own advantages.

However, while speaking about positive tendencies we at the same time clearly understand our shortcomings. A scrupulous, objective analysis of our work

shows that so-called superficial problems have been solved. In the future we must increase our efforts to more thoroughly process raw materials, to increase the production of low-fat products, to eliminate the gap between indicators of leading and lagging enterprises, and so forth.

The emphasis placed on the necessity to strengthen integration of agriculture within the corresponding branches of industry in the country's Basic Directions is completely correct. There is also no doubt that direct ties between our enterprises and kolkhozes and sovkhozes should develop more actively.

The pace of restructuring in preparing for a transition to new administrative methods, which will be introduced as of 1 January 1986, must be accelerated sharply. All of this places before the many thousands of branch collectives the task of working with ultimate intensity and of psychologically preparing themselves for building their future operations on the basis of new, increased requirements. Only in this case will we be able to reach new limits as determined by plans for the 12th Five-Year Plan and by the draft of Basic Directions, which is being studied by each one of us with great attention. Incidentally, in my opinion, this document must contain a few words about the fact that enterprises of the meat and dairy industry should increase production output of secondary products and should also utilize byproducts for the production of various types of materials. Here, of course, we need the help of scientists, who must develop a technology for producing these materials.

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CSO: 1824/134

AGRO-ECONOMICS AND ORGANIZATION

BRIEFS

STAVROPOL KRAY EXPERIMENT—Collective and state farms in Stavropol Kray have gone over to operation under the system of financial autonomy and self-support [samookupayemost]. The essence of the experiment is that all farms in the kray now formulate and implement their development plans relying on their profits alone. Self-support has already become the standard system on a number of leading farms. An example of this is the achievement of Kazminskiy farm, whose annual profits reach R 6 million. [Text] [Moscow Domestic Service in Russian 0700 GMT 6 Jan 86] /9274

CSO: 1824/182

AGRICULTURAL ECONOMICS AND ORGANIZATION

RSFSR PRIVATE-PLOT LIVESTOCK RAISING ON CONTRACT BASIS PROMOTED

Moscow SELSKOYE KHOZYAYSTVO ROSSII in Russian No 10, Oct 85 pp 13-15

[Article by Z. Shuklina, economist: "The Private Farm--Mutual Gain"]

[Text] In evaluating the economic and production potential of the agroindustrial complex and the preferableness of this or that way of developing it, we do not look that frequently at the private subsidiary farms of rural inhabitants, attaching to these farms a particularly auxiliary, subsidiary role as is apparent from the name itself. And this is unwarranted. Their contribution to the total volume of produced agricultural products is not that small. One-fifth of the total head of cattle, including almost each third cow, come under the use of rural inhabitants. The number of pigs, sheep and goats is great in rural homesteads. The products produced on private subsidiary farms add in significant measure to the country's food resources. Thus in state production of milk and meat, the share of private subsidiary farms has amounted to 15 and 26 percent respectively. The major portion of these products are used on private farms. On the average, about 25 percent of the production of private subsidiary farms assumes a marketable form. For example, marketability of meat in 1983 was 42 percent and of milk 14 percent. And these are quite substantial percentages. Millions of tons of valuable food products are sold through state procurement organizations, consumer cooperatives and in the market.

But not all the capabilities of the rural homestead are being used in full measure. It is enough to say that more than one third of the workers, kolkhoz farmers and employees in rural localities of the RSFSR (34.7 percent) do not own in general any cattle, restricting themselves on their private subsidiary farms to vegetable raising. Calculations show that if the level of maintenance of cattle on private subsidiary farms is brought up to norms set by the Kolkhoz Statute the total output of animal husbandry would be doubled.

But realization of this reserve requires the elimination of a number of causes that still hold back the development of private subsidiary farms. A selective survey of rural inhabitants in Bryansk Oblast showed that the main ones among them are insufficient assistance on the part of management of kolkhozes and sovkhoses in providing fodder (52 percent of those surveyed), acquisition of young stock (25 percent) and difficulties in the sale of products (16 percent). But the determining factor in the development of private subsidiary

farms has been and continues to be an active approach to the organization of production and procurement by actual owners of private subsidiary farms and by public enterprises.

In recent years, with the publication of important decrees of the CPSU Central Committee and the USSR Council of Ministers on questions of further development of private subsidiary farms, the attention of soviet, agricultural organizations paid to the needs of rural inhabitants engaged on their farms in raising livestock and poultry has markedly increased in the localities. They are now sold coarse and concentrated feeds and more concern is given to the creation of conditions for the sale of surplus products. Kolkhozes and sovkhozes have been given the right to purchase cattle and milk from citizens on the basis of contracts, with what has been purchased being credited to the fulfillment of the production and procurement plan. Since 1982, higher purchase prices have been introduced for animal-husbandry products. The adopted measures have made it possible to increase the number of cattle and poultry among the population, and the level of product purchases has grown. For example, in Bryansk Oblast where 220,000 families have private subsidiary farms, the number of cows in private use now amounts to 29 percent of their total number for all categories of farms. Private farms maintain more than one-third of the total number of pigs. Milk production on private subsidiary farms exceeds 30 percent and meat production--39 percent of the total volume. Due to these products, not only are the needs of the owners of private subsidiary farms satisfied, but a significant portion of their production reaches state resources and is sold at kolkhoz markets and consumer cooperative enterprises. This is largely abetted by strengthening of the economic and production ties of the private and public sectors.

The changeover of relations between the private and public sectors to a contractual basis guarantees for owners of private subsidiary farms effective assistance in development of production, availability of feed and young stock and the purchase of surpluses of animal-husbandry products. At the present time, standard contracts have become prevalent for the purchase of surpluses of milk and rearing and fattening of cattle, pigs and poultry. In the same Bryansk Oblast, 69,000 tons of milk, or 90 percent purchased from the population, are received on the basis of contracts between owners of cows and kolkhozes and sovkhozes. On the basis of contractual conditions, about 18,000 tons of meat have been turned over. This constitutes 92 percent sold to the state by the rural population through kolkhozes and sovkhozes. An essential condition for the conclusion of contracts is conscientious work by kolkhoz farmers, workers and employees in public production. Contracts are also concluded with pensioners.

All presently existing forms of contractual relations between the private and public sectors can be reduced to three basic types: relations founded on the purchase and sale of animal-husbandry products, on partial and, lastly, on full economic cooperation with public production.

The basis of contractual relations for purchase and sale of animal-husbandry products is founded on the organization of their procurement by the public sector. At the same time, agricultural enterprises purchase only products produced on private subsidiary farms, obliging themselves to transport them

and to make settlements with owners who in turn are seeking the possibility for self-provision of feed, young stock and tools. Such a form, it appears to us, has limited possibilities of development, since the fodder grown on a farmstead plot and food wastes alone are not adequate. This is why many rural inhabitants in answers to the questions of our questionnaire have indicated that lack of assistance from a public enterprise in provision of hayfields and pastures and in provision of concentrated feeds results in reduction of the number of cattle.

With such a form of relations, difficulties arise in connection with acquisition of young stock and poultry inasmuch as the high market prices do not satisfy everyone, while inadequate saturation of the market with saleable young stock creates additional difficulties.

The second form--partial cooperation of the public and private sectors--is based on contractual relations according to which the management of a kolkhoz or sovkhoz undertakes to provide young stock and fodder, to offer production services and to purchase surpluses of animal-husbandry products. This form has already become widely prevalent on many farms of Bryansk, Moscow, Gorkiy and many other oblasts.

What is the mutual benefit here for agricultural enterprises and the owners of private subsidiary farms? The immediate interests of the contracting parties. For example, at Oktyabrskiy Sovkhoz of Brasovskiy Rayon in Bryansk Oblast, the following procedure was established in conclusion of contracts with the population for rearing of piglets: a single piglet weighing 15-20 kilograms is provided free, another for a set price. On reaching a weight of 115-120 kilograms, the animal is turned over to a receiving center of the farm. The sovkhoz provides workers not only with young pig stock but also issues per pig two quintals of mixed feed and provides additional plots of 0.15 hectare of land for planting of fodder beet and turnips. Owners of private subsidiary farms when fattening pigs get paid like pig tenders: for a quintal of weight gain--6 rubles 53 kopecks. Moreover, for exceeding average daily weight gains of more than 300 grams, the deliverer receives an additional payment in the amount of 20 percent of the paid sum. Thus, the sovkhoz gets from private subsidiary farms up to 50 percent of the pork turned over to the state.

Or take Pavlishchevo Sovkhoz of Mozhayskiy Rayon in Moscow Oblast. Here in 1982 eighty head of stock were turned over by the population under contractual conditions, while in 1984 more than 150 calves were fed on farms of sovkhoz workers. Same take on 2-3 calves for rearing, as they are assured of full provision of the cattle with fodder. The sovkhoz issues per calf 300 kilograms of concentrated feed. In addition hay, straw and fodder tubers are sold. In 1984, about 60 tons of meat of cattle were returned to the sovkhoz after being reared on private subsidiary farms. This amounted to 18 percent of that which the sovkhoz sold to the state.

The example is quite characteristic. It shows that owners of private farms eagerly engage in further expansion of ties with public enterprises, fattening several head of cattle or more than one group of 10 pigs. But such an increase in the number of livestock being fattened on private subsidiary farms requires quite large labor expenditures and therefore has found application

only among those families where there are persons not engaged in public production--pensioners, housewives, teenagers. And in other cases? For example, a young family experienced the desire to test their resources in a new undertaking and to acquire experience. And additional earnings don't do any harm. But where do you get the time?

Experience itself prompted a solution: to organize an animal-husbandry association--a kind of kolkhoz in a kolkhoz. They are created as a rule on those farms where a significant portion of the population lives in multistory buildings and lacks quarters for livestock. This is also characteristic of zones with a high level of plowed land where grazing for private livestock has been curtailed. Such animal-husbandry associations have been organized in Sverdlovsk, Perm, and Moscow oblasts and in Krasnodar Kray. This form in our view is extremely promising. This is also indicated by the fact that in Moscow Oblast alone 20 such associations, rearing 1,500 calves, have been organized. Let us take as an example the work experience of such an association on Klemenovskiy Sovkhoz in Yegoryevskiy Rayon. It pools 30 sovkhoz workers who during the time they are free from work in public production rear 184 calves turned over from the sovkhoz herd. Securing average daily weight gains of more than 900 grams, the members of the association turn over to the sovkhoz each year about 38 tons of meat. Payments to each worker engaged in rearing the calves reach 1,600 rubles.

The third form--a full relationship of the private and public sectors based on cooperation--provides for the introduction of the technology of public production on private subsidiary farms, transforming the private farm into a home-operation subsector. This highest form of integration is based on long-term contractual relations. It consists of modernization and specialization of production on private subsidiary farms, well-defined norms of maintenance and feeding of livestock and the presence in public production of a strong base for processing and sale of purchased products. Such a form of cooperation may undergo development in the future with specialization of private subsidiary farms and their integration in public production.

But at the present time, when the consumer character is predominant on private subsidiary farms (up to 80 percent of the products produced are spent on personal needs), assistance on the part of kolkhozes and sovkhozes and stress on development have to be made on multisectorial private farms.

The work experience of Strana Sovetov Kolkhoz of Mglinskiy Rayon in Bryansk Oblast is interesting in this regard. One-fourth of the milk sold to the state is purchased by the kolkhoz from private farms of citizens. More than 70 percent of kolkhoz farms conclude contracts for fattening of livestock. The kolkhoz sells to them for this purpose 300-400 piglets a year. For the fattening of a single pig, 150 kilograms of mixed feed are allotted and for cattle--one kilogram of mixed feed for a kilogram of live weight. For cows, 0.03 hectare of a hayfield are assigned for each 100 kilograms of milk sold to the state. The kolkhoz helps the elderly and labor veterans to plant homestead plots and brings fodder to the homestead.

Undoubtedly these and other measures increase the incentive of kolkhoz members to increase the output of animal-husbandry products on private subsidiary

farms, surpluses of which are purchased for intrafarm needs as well as for sale to the state.

As we see, forms of cooperation of the public and private sectors on a contractual basis stemming from a diversity of existing reserves and ways of increasing production on private subsidiary farms are aimed in the final analysis on the creation of a state food fund. At the same time, private subsidiary farms and socialized farms secure mutual benefits from cooperation of their productive activity.

Cooperation is beneficial to a private farm because it frees the owner of the trouble of acquisition of means of production and removes concern for sale of products. Furthermore, the rural inhabitant engaged in the production of agricultural products on a contractual basis with the public sector has the right to expand the size of the private subsidiary farm, receives credits on a preferential basis and maintains on a high level the satisfaction of personal needs for food products. Thus on many farms of Bryansk Oblast, an initiative has become prevalent wherein a young family obtains a cow free of pay. Moreover, in 1984 rural households were sold here 167,000 piglets, 6,000 fertile heifers and 3.5 million each of young poultry stock. Purchases of milk in the oblasts are conducted by 1,610 milk collectors, and 90 milk receiving stations are in operation. The population has been allotted 150,000 hectares of hayfields and pastures and the sale of course and succulent fodder has been considerably increased.

Cooperation with private subsidiary farms also brings significant gains to public production. First of all, economy of material and technical resources, for on the private subsidiary farm, production is frequently less materials intensive than on the public farm, fodder is used without losses and farm structures are inexpensive. It is of no small importance that the fodder resources of private subsidiary farms are to a considerable degree added to from food wastes and household plant growing, which serves, as it were, as an additional source of fodder stocks of kolkhozes and sovkhozes. The economic use of forage in turn results in lowering production cost and reducing the fattening time of animals, while the small concentration of animals on the household grounds and individual care ensure safety of the animals and exclude product losses. Involvement of pensioners, housewives and youngsters in the work increases the level of employment of the rural population. As a result, significant reserves are mobilized for increased production of agricultural products (purchases on the basis of contracts from private subsidiary farms, it, as has already been said, is credited in the volume of production and in the fulfillment of the plan of purchases with paid markups for quantitative and qualitative indicators). Thus, on Ryabchevskiy Sovkhoz of Trubchevskiy Rayon in Bryansk Oblast, each year 65 tons of meat are purchased on contracts from the population, which per rural household amounts to 238 kilograms. All livestock is turned over through the sovkhoz and is credited on the state plan of purchases.

But the successful development of contractual relations is impossible without strict observance of the basic conditions of cooperation: the voluntary character of selection of partners for production and sale of products,

provision of real assistance to private subsidiary farms, efficient organization of work and mutual benefit.

The condition of voluntary participation presumes freedom of choice by owners of private subsidiary farms in ways of sale of surpluses of produced products. In this case, representatives of kolkhozes and sovkhozes can only explain the advantages provided by the system of private subsidiary farms with public production, in no case resorting to the authority of the government. The results of the selective survey of rural inhabitants of Bryansk Oblast once again confirm that the best agitator was and continues to be experience and the visible result. In Bryansk Oblast, the greater portion of those surveyed (61 percent) today prefer to sell animal-husbandry products of their private subsidiary farms to kolkhozes and sovkhozes. A positive influence is exerted on the development of such a tendency by measures for providing private subsidiary farms with fodder and young stock and improving forms of purchases of products.

The second condition--the real character of assistance--consists of the fact that it is important to point out in the contract that assistance which can and is actually be provided by public production. This is necessary so that the actual idea of cooperation is not discredited in the eyes of owners of private subsidiary farms. On the basis of the results of the survey, it was established that 40 percent of the owners of private subsidiary farms, who in 1983 had concluded contracts, received only partial aid in the form of granting of hayfields and pastures, while 23 percent had in general seen no assistance of any sort. It is natural that in the following year it was difficult for representatives of kolkhozes and sovkhozes and at times even impossible to conclude a contract with those owners of private subsidiary farms who had become disenchanted with the obligatory character of the partners.

However, on those farms where contractual conditions are strictly fulfilled, the persons desiring to conclude contracts are becoming more numerous with each year. The experience of Oktyabr' Kolkhoz of Klimovskiy Rayon, for example, is a visible confirmation of this. Here contracts are being made with each cow owner for the purchase of surplus milk from the population. Coverage of contracts for the purchase and rearing of livestock included 80 percent of rural households.

The kolkhoz turned over for private livestock 40 tons of grain and provided 150 hectares of plowland and 4 hectares of land for sowing fodder crops. According to last year's results, 1.5 tons of milk were sold to the state from each privately owned cow. For this year, many cow owners assumed commitments to increase the sale of milk. The number of persons desiring to rear piglets on contracts with the kolkhoz also has grown. Such contracts were concluded with many kolkhoz members and pensioners, the coverage including 88 percent of the total number of rural households.

The third condition--efficient organization of cooperative work--presupposes a clear and definite determination of aims, forms and methods of work. This requires disclosure of the marketable resources of milk and meat which the private subsidiary farms possess, determination of fodder stocks and

possibilities of adding to them, the need for young stock and ways of providing assistance in strengthening the material and technical equipment and improvement of organization of purchases of surpluses of products on the private farms.

The fourth and possibly the main condition--mutual benefit--does not require any special explanations: the examples cited in the article convincingly show that the first three conditions for this were established to ensure the fulfillment of the fourth. And it in its turn serves as a good stimulus and a reliable guarantee of the widest possible involvement of private subsidiary farms in the solution of tasks set before the agroindustrial complexes by the USSR Food Program.

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CSO: 1824/81

TILLING AND CROPPING TECHNOLOGY

BUCKWHEAT AND MILLET SITUATION SURVEYED

Moscow ZAKUPKI SELSKOKHOZYAYSTVENNYKH PRODUKTOV in Russian No 7, Jul 85, pp 34-37

[Article by I. Yelagin, doctor of agricultural sciences, professor: "Buckwheat and Millet in the Country's Foodstuffs Fund"]

[Text] The purchase of high grade groat crops is quite important in supplementing state resources. However, because of their use for intrafarm needs the share of buckwheat and millet which is marketed is still quite low: 40-50 percent of gross harvests. Some farms, not fulfilling state targets, process buckwheat and millet into groats and sell it to the public at markets or to consumer cooperatives. For example, many farms in Belgorod Oblast do not observe procurement discipline and every year fail to fulfill plans for the purchase of groat crops. For some reason, at kolkhozes and sovkhoses here it has been decided to keep only as much groats as are needed for seed and public food service and to sell the remainder to the state. They have obviously forgotten the grain grower's first commandment. Unfortunately, the same behavior is seen in other oblasts.

It is profitable for kolkhozes and sovkhoses to obtain high yields, increase gross harvests and sell as much buckwheat as possible to the state. The farms themselves should be interested in this. The price for a ton of buckwheat sold to the state has been set at 400 rubles and for a ton of high grade millet the price is 200 rubles.

There are also provisions to pay kolkhozes, sovkhoses and other agricultural enterprises markups of up to 50 percent of purchase price for exceeding the average level of sales of buckwheat and millet to the state attained during the 10th Five-Year Plan. This is independent of whether or not the entire grain sales plan was fulfilled. There is a 10 percent additional payment for high grade varieties of buckwheat.

In order to stimulate the production and purchase of buckwheat, the counter trade sales of mixed feed and grain feeds has been organized: for each quintal of buckwheat sold to the state, the farm receives a quintal of mixed feed. The area planted to buckwheat, its yield and gross harvest are noted in special entries on production and financial documents.

In summing up the results of socialist competition it has been deemed advisable to consider state plans for grain purchases as fulfilled by union and autonomous republics, krays, oblasts, rayons and farms only on the condition that they fulfill state plans for buckwheat purchases and if farms are completely supplied with seeds for this crop (including reserve stocks) for spring planting.

Taking this into consideration, many kolkhozes and sovkhoses in various zones of the country use optimal agronomic techniques to annually raise high yields and overfulfill plans for purchasing these valuable groat crops.

The experience of kolkhozes and sovkhoses in Aznakayevskiy Rayon in the Tatar ASSR is very instructive. Every year they raise high yielding buckwheat and sell large amounts of it to the state, as can be seen from Table 1.

Table 1.

Increases in Buckwheat Production and Sales at Farms in Aznakayevskiy Rayon, Tatar ASSR

Indicator	1966- 1970	1971- 1975	1976- 1980	1981	1982	1983	1985
Sown area (hectares)	2951.0	4528.0	8692.0	8200.0	8200.0	7,600.0	7600.0
Groat crops as percent of above	3.6	5.5	10.4	10.0	10.0	9.7	9.7
Yields (quintals per hectare)	7.8	8.9	10.2	10.5	10.5	15.3	9.2
Gross harvest (tons)	2313.0	4048.0	8839.0	8500.0	8610.0	11628.0	6992.0
Purchase plan (tons)	1275.0	1395.0	3094.0	4000.0	4000.0	4000.0	4000.0
Sold to state (tons)	1747.0	2040.0	5508.0	4114.0	4114.0	6200.0	3500.0
Plan fulfill- ment (percent)	137.0	146.0	136.0	103.0	103.0	135.7	87.5
Prime cost per quintal (rubles)	14.7	10.3	10.5	12.7	12.7	13.1	13.8
Profitability (percent)	166.0	174.0	125.8	178.0	178.0	237.0	179.0

Every year kolkhozes and sovkhoses in the rayon plant 7,000-8,000 hectares of buckwheat, one-tenth of the republic's total area planted to this crop. These farms account for 27-30 percent of its total sales to the state.

The use of bees for pollinating buckwheat makes it possible for the rayon's farms to obtain high yields and a large amount of honey. About 5,000 bee swarms are usually used to pollinate buckwheat. Each swarm produces 40-50 kilograms of commercial honey, considerably increasing the income from buckwheat.

At the Progress Kolkhoz in Glubokovskiy Rayon, East Kazakhstan Oblast, where Viktor Ivanovich Grachev is the chief agronomist, more than 500 hectares are annually planted to buckwheat (out of 9,200 hectares of arable land). Using optimal agronomic techniques most appropriate to the biological characteristics of the Bogatyr variety and to local soil and climate conditions, the farm obtains high yields of this crop.

In 1984 yields from 525 hectares averaged 27.3 quintals, 1,429 tons were harvested, 1,250 tons were sold to the state, which paid the kolkhoz more than 500,000 rubles for them. Also, the kolkhoz received, in return, 1,250 tons of mixed feeds at state prices.

Every year high buckwheat yields are obtained at the Ukraina Kolkhoz in Volochiskiy Rayon, Khmel'nitskiy Oblast (V. Volovyna, chairman and A. Koval, chief agronomist). Buckwheat is planted here in a complete crop rotation following sugar beets. Each hectare receives 30-35 tons of manure, 550-550 tons of mineral fertilizers (active ingredients). The soil is worked to a depth of 18-20 cm using KPP-2.2 chisel plows with V-sweeps. In the spring it is disked twice with 3BZSS-1 disks and the soil leveled by ShB-2.5 sweepers with ZBZP-0.6 planting harrows. Two quintals of nitroammoniphosphate are applied to each hectare. Then, prior to planting, the soil is cultivated twice, 10-12 cm deep, by KPS-4's with toothed rollers and harrows. On planting day the soil is worked by USMK-5.4 cultivators with V-sweeps, rod rollers and OR-0.7 harrows to a depth of 6 cm.

Planting takes place from 6 to 12 May, using SST-12A sugar beet planters. Thirty kilograms of potash magnesia are applied, Class-I Viktoriya seeds are used (1,000 seeds such weigh 27.2 grams). Prior to planting they are treated with granozan. The seeding rate is 2.5 million seeds per hectare. Simultaneous with planting the soil is compacted by crawler tractors pulling ZKVT-1.4 rollers.

Prior to the appearance of shoots, the fields are tilled by slowly moving tractors pulling OR-0.7 and S-11 harrows. After this there are three interrow tillage operations to remove weeds and compact the soil: when marking rows fields are tilled 5-6 cm deep by USMK-5.4 cultivators (with knife shovels and rotary cultivators); during budding they are tilled 8-10 cm deep, and during mass flowering they are cultivated 10-12 cm deep using chisel shovels. Phosphorus and potassium (40 kg of active ingredients per hectare) are applied.

At the onset of buckwheat flowering, 3-4 swarms of bees are set out for each hectare. When 70-75 percent of the grain has turned brown, the buckwheat is cut and windrowed by ZhSK-4 and ShRS-4.9 windrowers. The windrows are picked up and threshed by SK-5 "Niva" combines with their cylinders rotating at 400-500 rpm. The straw is chopped and gathered.

By using this equipment it is possible for the kolkhoz to obtain high yields year after year. As can be seen from Table 2, the farm sells large quantities of buckwheat to the state.

Skillfully using progressive agronomic techniques, many farms in different zones annually raise high yields of millet. Large amounts of this crop are sold to the state and sizable incomes obtained. In 1983 the Sovetskaya Rossiya Sovkhoz in Smolenskiy Rayon, Altay Kray obtained an average of 29.4 quintals of millet per hectare from 1,528 hectares, permitting the farm to sell the state more than 2,500 tons of such grain to the state.

In 1984, the Sovkhoz imeni Krupskaya in Meleskesskiy Rayon, Ulyanov Oblast averaged 29.8 quintals of millet from 1,318 hectares. It harvested 3,856 tons of millet, 2,160 tons of which were sold to the state. At a prime cost of 6.18 rubles per quintal, income per hectare was 220 rubles.

Table 2.

Main Indicators for the Production and State Sales of Buckwheat at the Ukraina Kolkhoz

	1976- 1981	1981 1984	1984	
			Plan	Actual
Area sown to buckwheat (hectares)	117.0	200.0	200.0	200.0
Yields (quintals per hectare)	23.9	21.4	16.0	25.8
Gross harvest (tons)	279.6	427.8	320.0	517.0
Sales to the state (tons)	238.0	303.0	144.0	349.0
Plan fulfillment (percent)	186.2	209.0	100.0	242.0
Labor outlays				
Per hectare (person hours)	43.40	36.25	23.84	36.63
Per quintal (person hours)	1.80	1.69	1.49	1.42
Prime cost (rubles)	7.18	7.43	7.45	8.33
Profitability (percent)	166.0	404.5	33.0	466.0
Net income received (rubles)	331.0	530.7	50.0	871.4

Skillfully using progressive technology for millet growing, even during dry years many farms are able to obtain high yields and sell large amounts of grain to the state, thus showing the high economic efficiency of growing this crop.

In the very dry conditions during 1984, the Solnechnyy Sovkhoz in Privolzhskiy Rayon, Kuybyshev Oblast averaged 14,8 quintals of millet from 1,000 hectares. The sovkhov sold to the state 1,242.9 tons of its 1,479.6 ton gross harvest, fulfilling its plan 120.7 percent. The prime cost per quintal was 7.45 rubles, so the farm's net income per hectare in millet was 97 rubles.

Based on the use of contemporary technology, the Oktyabr Kolkhoz in Marinskiy Rayon, Donetsk Oblast obtains high millet yields year after year. During the 10th Five-Year Plan its millet yields averaged 29.6 quintals per hectare and in 1982 it was 27 q/ha. The highest yield was in 1980, when the farm obtained 45.2 quintals from each of 80 hectares. As a result, its sales plan was 574 percent fulfilled. Because of a serious drought, in 1983 the yield was reduced considerably and the sales plan was only 55.5 percent fulfilled. In 1984

weather conditions were not so favorable. However, the use of a reliable system of agronomic operations for growing such crops made it possible for the farm to average 15.9 q/ha and sell the state 70 tons of millet. The prime cost per quintal was 7.45 rubles, so the farm obtained 200 rubles from each hectare.

All the conditions necessary for increasing buckwheat and millet production and purchases are present at kolkhozes and sovkhozes. They only need to change their attitude towards these valuable groat crops, placing more national economic importance upon them.

Above all, in zones where growing conditions are favorable, groat crop plantings should be expanded and concentrated in those regions and farms where the use of industrial technology, progressive work organization and payment makes it possible to raise high and stable yields of buckwheat and millet.

Simultaneously, there must be improvements in the growing of seed for regionalized varieties of buckwheat and especially, of smut resistant millet. Intervarietal hybrid buckwheat seeds with improved heterosis should be raised. It is not difficult to grow such seeds on plots at scientific research institutions and to supply them to production plantings of such crops.

Farms planting buckwheat should give more attention to bee breeding and keeping, so as to fully support crop pollination with 2-3 swarms per hectare.

Farms which grow buckwheat and millet should be completely supplied with triangular and longitudinal screens for cleaning machines in order to clean food and seed grains from these crops. The lack of such screens hinders the cleaning of food and seed buckwheat from seeds of wild radish and many small seeded weeds (Japanese barnyard millet, green and yellow foxtail, wild buckwheats [razvesistaya and vyunkovaya grechishka], goosefoot, stickseed, hemp nettle, field morning glory, knapweed, thistles), which considerably reduce the quality of grain and the groats produced from it.

The sieves on SK-5 "Niva" combines require PKK-5 attachments for groat harvesting, which reduce grain losses, shattering and breakage during harvesting. According to data from the Siberian Machinery Testing Station, during the harvesting (from windrows) of millet with 18.7 percent moisture content in grain, 37.5 percent in straw and 20.5 percent in chaff, the PKK-5 attachment reduced grain shattering from 12.01 percent to 4.59 percent, and breakage from 7.01 to 1.39 percent. The productivity of combines equipped with PKK-5 attachments was 2 hectares per hour.

In order to pick up and thresh millet windrows it has proven itself useful to reequip combines with reliable hermetic seals and not to let cylinder speed exceed 700-750 rpm. Clearances between the concave and cylinder should be 14-16 mm at the inlet and 3-4 mm at outlet.

Melanosis, a bacterial and fungal infection of the kernel, is frequently observed in millet. It is especially intense when millet is harvested during moist and cold years. Kernels are covered by dark spots of various size: from a point infection to complete darkening. This reduces grain weight. During

hulling more than half of the infected seeds are destroyed, reducing output. If more than 2-3 percent of the grains are spoiled, the kasha made from millet acquires a greyish tint and its taste deteriorates. To prevent this disease, millet must be quickly harvested and unthreshed windrows not left in the field.

At the Orenburg NIISKH [Scientific Research Institute for Agriculture] good results have been obtained when millet is windrowed at specific times of the day during hot weather. The millet is cut when relative humidity is not less than 40-45 percent and is stopped when humidity declines below 40 percent. Compared to harvesting when moisture is below 40 percent, grain loss is reduced by 4-5 fold. In 1978 at 5 AM, with humidity at 61 percent grain loss in windrows was 9.5 grams per square meter, while at 1 PM, humidity at 21 percent, losses were 49.9 grams per square meter.

In dry hot weather the optimal air moisture in the evening is from 8 to 10 PM, it usually increases at night and by 9-11 AM declines to below 40 percent. Under these conditions windrowers can work 13-16 hours daily. This method results in up to 3 quintals of additional high quality grain per hectare.

The highest grades of buckwheat and millet, the lists of which are annually reviewed and approved by the USSR Ministry of Agriculture and the USSR Ministry of Procurement, should have the established quality indicators: a grain mixture should not have more than 6 percent broken and sprouted seeds, including not more than 1 percent sprouted seeds, the mixture should not have more than 0.5 percent spoiled seeds, the weed content should not be more than 1.5 percent difficult to separate weed seeds (yellow foxtail, cow soapwort, Johnson grass, rice and Japanese barnyard millet, day-flower); there should be no poisonous weeds: trikhodesmy inkanum [trans. unknown] and downy fruit heliotrope.

Buckwheat in the highest grades brings a 10 percent higher price than that set for this crop if it has normal color and smell, has not more than 4 percent broken seeds in the grain mixture and not more than 0.5 weeds in the weed mixture.

In conclusion I want to say that it would not be bad to legalize the shipment to farms of groats in state reserves for public food service and childrens institutions, in exchange for buckwheat and millet sold above the plan. This would also be a stimulus to increase the production and sales of these important food crops.

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TILLING AND CROPPING TECHNOLOGY

BUCKWHEAT AGRONOMY IN TATAR ASSR OUTLINED

Saratov STEPNIYYE PROSTORY in Russian No 6 85 p 21

[Article by S. A. Sharipov, deputy chief, Tatar NIISKh [Scientific Research Institute for Agriculture] "The Buckwheat Fields"]

[Text] The soil and climate of Tatariya make it possible to obtain high yields of buckwheat. This crop now occupies about 80,000 hectares in the Eastern Industrial and Predvolzhskaya Zones. Year after year progressive buckwheat planting farms obtain stable yields.

Farmers at the Kolkhoz imeni Kalinin in Muslyumovskiy Rayon are famous in the republic for their achievements. At this farm buckwheat enjoys special recognition as a valuable groat and honey producing crop. It raises the Mayskaya and Krasnostreletskaya varieties, bred at the Tatar NIISKh.

The economic indicators for the efficiency of buckwheat growing are somewhat higher at the Kolkhoz imeni Kalinin than at other farms in the rayon. Even in 1983, with conditions unfavorable for this crop, the farm grew 16.5 quintals per hectare, while the rayon averaged 10. The buckwheat sales plan was overfulfilled by 2 fold and net income was 296.9 rubles per hectare.

These successes are the result of creative work by kolkhoz specialists to improve buckwheat agronomic techniques. The selection of sites and predecessors is important for increasing yields. This farm locates buckwheat near forest belts and forested areas and on southeast slopes. In selecting predecessors, consideration is given to soil texture and erodibility. Heavy, eroded soils are unfavorable for buckwheat. Winter rye, seed legumes and row crops are the best predecessors.

Great importance is placed upon the tillage system. Its selection is based upon soil texture, predecessors and weed infestation. After the predecessor crop is harvested, the stubble is cross scuffled 10-12 cm deep, after 8-10 days, it is plowed 25-30 cm deep, the plowing horizon is deepened to 35-40 cm by KPG-250 chisel plows with V-sweeps, making it possible to accumulate and retain more autumn and spring moisture. Primary and preplanting tillage is directed towards removing weeds and improving microorganism activities. The retention of snow and melt waters also helps accumulate moisture.

Buckwheat growing experience shows that without the proper use of organic and mineral fertilizers it is impossible to obtain high yields. Fertilizer application compensates for nutrients removed in harvested crops. An important role is played by phosphate meal applications (5-10 quintals per hectare). They meet plants' needs for phosphorus throughout the entire vegetative growth period, improve calcium nutrition and flower nectar output, helping in their more complete pollination.

The initial phases of this crop's development use much nitrogen fertilizer. Good results are obtained when 1-1.5 quintals of ammonium nitrate and 0.5-1 quintals of potash magnesia are applied to each hectare during spring cultivation. During planting 1.5 quintals of compound fertilizers or a mixture of superphosphate and nitrogen fertilizers are applied.

Yields depend to a great extent upon planting time and seed quality. There should be a creative approach to the determination of planting time, with consideration given to each field's soil and climatic conditions and the current weather. There are three plantings. This helps reduce the negative impact late spring and early autumn frosts have upon buckwheat sprouting.

It is also important that flowering and fruit formation stages do not coincide with high temperature periods. It is considered best to plant when the soil warms up to +12-14 C at 8-10 cm deep.

Prior to planting buckwheat seeds are weight graded in mechanized circulating washers, where they are coated with microelements (boron, molybdenum and manganese). Two weeks prior to planting they are dusted with wood ash (8-10 kg per quintal of seeds).

Only Class I, large, uniform seeds are used.

In addition to other factors, the introduction of row crop tillage has become an important reserve for improving the efficiency of buckwheat growing at farms. Buckwheat is only planted in widely spaced rows, with seeding rates of 2.0-2.5 million germinating seeds per hectare. Scientific institutions' research results and progressive experience show that such a planting method yields more grain than does the ordinary row method.

The Mayskaya and Krasnostreletskaya large grain varieties have a positive influence upon reducing seeding rates, as there is an increase in the plant nutrition area and additional side branches, leaves, flower clusters, flowers and root systems develop, making possible the better growth of vegetative organs. With this planting method it is possible to perform interrow cultivation, top dressing, weed eradication and retain soil moisture.

The organization of intensive pollination by bees is a major factor in improving buckwheat yields.

During flowering the movement of amateur beekeepers' apiaries and hives is organized. There should be 2-3 hives. Delays in this movement lead to shortfalls of 3-5 kg of honey and more than 20 kg of grain per hectare.

Buckwheat is planted by sugarbeet planters and harvested in separate operations by SK-4 combines when 80-90 percent of the plants are brown. In order to reduce breakage, the combine cylinder is set for slower rotation speed.

It is very important to attach this crop to mechanized links working on contract and paid for final production results. With this work organization the high level of material rewards increases machinery operators' personal interest in improving yields and increasing gross harvests.

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TILLING AND CROPPING TECHNOLOGY

VASKhNIL CHAIRMAN ON INTENSIFICATION, INCREASE IN GRAIN PRODUCTION

Moscow KADRY SELSKOGO KHOZYAYSTVA in Russian No 1, Jan-Feb 85 pp 37-43

[Interview by M. Kompaneyep with Aleksandr Aleksandrovich Nikonov, president of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V. I. Lenin], under the rubric "APK [Agroindustrial Complex]--Cadres--Implementation of the Food Program: "Scientific Cadres in the Solution of the Grain Problem"]

[Text] At the October 1984 Plenum of the CPSU Central Committee the General Secretary of the Central Committee, Comrade K. U. Chernenko, in establishing the significance of the question under examination, noted that we are speaking about great supplementary measures directed at solving the food problem on the basis of a systematic intensification of agricultural production and of extensive land reclamation. He emphasized that the key problem, as before, is that of steadfastly increasing grain production.

[Question] Aleksandr Aleksandrovich, would you please share your thoughts about the role of agricultural science in the intensification of production and the role of scientific cadres in the transition of the agricultural economy to an intensive path of development, particularly as concerns the grain problem?

[Answer] Science has become an active production force in society. Its influence was noticeable even when the economy was developing along an extensive path.

Now we have moved to an intensive path of development. The influence of science and consequently especially of its cadres has grown immeasurably. In speaking about intensification in the past we often emphasized the convergence of resources, their concentration per unit of land area. Under conditions of developed socialism intensification signifies a more complete utilization of resources, i. e. of land, water, technology, energy, work time and agricultural raw materials.

It is possible to utilize resource potential better and more fully only when the resources themselves improve, i. e. when the productivity of varieties of agricultural crops and breeds of animals grows and when new technologies and

methods of production organization as well as progressive forms of labor organization and stimulation are introduced. All of this can be provided only by science. For this reason, today we can rightfully call intensification a materialized science.

Intensification can be carried out only on the basis of scientific-technical progress. Here a certain one-sidedness in the interpretation of scientific-technical progress should be avoided. The fact is that sometimes scientific-technical progress is reduced simply to new technology, to new machines and equipment. We cannot acquiesce to this. After all, the plants being cultivated and the animals being bred are also the tools of labor, first and foremost. This means that to improve them there must be development not only of technical but of biological sciences as well. Secondly, the influence of scientific-technical progress cannot be limited only to production forces. This influence also encompasses production relations, that is, all factors--the methods and forms of management, forms of interrelations between people in the production process and the redistribution and use of products.

There is another aspect of the problem which I would like to bring to the attention of all workers of the agroindustrial complex. Scientific-technical progress, just like intensification, is justified only when it leads to growth in labor productivity and to a savings of time per production unit. Sometimes in practice it turns out that there is a direct savings in the expenditure of manpower, which creates the illusion that labor productivity is growing. But if material expenditures increase at this forestalling pace, society does not experience a savings. This type of progress is not useful for anyone. We need economy in total expenditures per unit of end product.

With such an approach the concept of intensification approximates the concept of production effectiveness. The more production per unit of expenditures, the greater the production effectiveness. In order to have growth in effectiveness it is not enough to simply invest resources and increase resource potential. It is no less important to provide the correct structures, proportions, forms of organization as well as a high level of interest and training of people, of labor and technological discipline and of responsibility. As you can see, in the final analysis everything is reduced to cadres, to people, and to the level of their professionalism and awareness.

[Question] Does this mean that in this sense the use of reclaimed lands also evidently depends to a decisive degree on the joint efforts of scientific and production cadres?

[Answer] Yes, of course. At the October 1984 Plenum of the CPSU Central Committee, as you recall, Konstantin Ustinovich Chernenko said openly that scientifically-based agricultural methods, the best varieties and hybrids, leading technologies and programmed harvests must be used on a priority basis on restored lands. And in truth the area of reclaimed lands is expanding steadfastly. Extensive resources are being put into each hectare. The return on these resources must be rapid and the entire management system on reclaimed lands must be different from the one for dry-farming lands.

First of all there is the question of variety. Here our breeders are in debt in terms of some crops and they will repay their debt soon. The full complement of fertilizers, a struggle against weeds, diseases and pests and programmed harvests are needed. Already today programming encompasses about 3 million hectares of reclaimed lands. In places where this was approached with a sense of responsibility and where every hectare was supplied with the essential resources the results became evident rapidly. Here is an example. Krasnaya Niva Kolkhoz of Mayskiy Rayon, Kabardino-Balkar ASSR, harvested 91 quintals of corn seed from each of 1,000 hectares on which the programming method was utilized. This was in 1984, a bad weather year. Irrigation made up for the deficiency caused by nature. There are many such enterprises. Evidently, the harvest must be programmed on every hectare.

What is programming? Simply speaking, this involves a consideration and satisfaction of those requirements which plants have toward the environment--water and nutrients must be provided, cultivated plants must be protected from enemies, proper care must be given, and all technological operations must be completed on schedule and with high quality. For this we need, above all, people who are very familiar with technology and organization and who utilize resources correctly. Of course, if there is a shortage of fertilizers and equipment then the idea of programming can be compromised, but it is extremely painful to see instances in which the resources are available but are not skilfully used, are squandered and wasted.

[Question] What is the situation with regard to scientific elaborations on the grain problem? With what kind of cadres potential will we be able to solve the problem?

[Answer] Today we have at our disposal a relatively high scientific potential. Within the system of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin alone we have 19,000 scientific workers; there are 130 scientific-research institutes and many other facilities. Science represents a production force of a special kind. It is not the technical means or the plant or animal organisms themselves. Scientific elaborations are the product of man's intellect. These elaborations are further materialized in the form of different models of organization, technology, machine designs, and plant varieties and hybrids.

Our scientific collectives annually produce hundreds and thousands of various elaborations; this is why scientific potential is very high in our country's agricultural sector. At the same time we are frequently dissatisfied with the results of the operations of some collectives--elaborations are sometimes incomplete, fragmented, of a private nature, not brought to their logical conclusion or not in the form of the final model which can be introduced immediately.

Contemporary conditions, especially in connection with the implementation of the country's Food Program, insistently require that we eliminate these shortcomings. Centrally and locally it is essential to direct scientific efforts first and foremost at solving the urgent and most important key problems of the Food Program, and at the grain problem on a priority basis.

[Question] Aleksandr Aleksandrovich, in speaking about production intensification you touched on one of the cardinal problems in the development of a socialist national economy--the problem of increasing labor productivity. Tell us, what does this mean in terms of grain production? On whom and on what does it depend?

[Answer] In terms of grain, which is just like any other product, an increase in labor productivity means a savings in work time per unit of end product.

Of course all of this is understandable. We can speak about the purely practical aspects. What factors must be influenced in order to achieve systematic and steadfast growth in labor productivity? One group of factors is related to increasing production volume and the output of end product and another group--to savings in expenditures themselves. As regards the grain industry it is important to achieve, first and foremost, stable growth in productivity. For the specific conditions of our country with its continental climate on most of our territory, especially in grain regions with frequent droughts and other unfavorable weather phenomena, hardiness acquires a decisive significance. The most powerful means of production stabilization is land reclamation. The government invests great resources into this. In addition, the variety is important, and this depends on the successes of breeding science. At the present time 52 breeding centers for plant growing, including 30 that specialize in the breeding of grain crops, have been organized in the country.

The successes of our breeders are well-known. In recent years breeding work has been directed at developing short-stemmed varieties of spike grain crops of the intensive type which are resistant to lodging, suitable for cultivation according to intensive and industrial technologies and capable of yielding 50-60 quintals of grain and more per hectare. With regard to wheat and rye this problem has been solved. Such varieties do exist. Among them are winter wheat varieties such as Odesskaya Polukarlikovaya, Donskaya Polukarlikovaya and others. About 87 million hectares, or over two-thirds of the grain fields, were sown in the new varieties for the 1984 harvest. They are truly highly productive. Here are the facts. In 1984 Druzhba Kolkhoz of Kiliyskiy Rayon, Odessa Oblast, produced a harvest of 74.7 quintals on each of 110 irrigated hectares, and many enterprises produced 50-55 quintals per hectare without irrigation.

New short-stemmed varieties of winter rye developed by the Bashkir Scientific-Research Institute of Farming and Breeding of Field Crops and by the Scientific-Research Institute of Agriculture in the Southeast (Saratov) are of great value. Under production conditions, for example, the Chulpan winter rye variety yields 40-50 quintals per hectare.

Non-shedding varieties of peas developed at the Voroshilovgrad Test Station are new in international breeding work. Cultivation of these varieties will sharply curtail grain losses due to shedding.

VASKhNIL academician F. G. Kirichenko of the All-Union Breeding Institute (Odessa) developed a winter form of durum wheat for the first time in international practice. Its productivity is on the level of 50 quintals per

hectare and more. The development of such varieties will enable us to greatly expand the area in which durum wheats, so essential to the preparation of macaroni, high-quality flour and groats, are cultivated. We can extend the list of achievements of our breeders. When one hears complaints about the fact that there are no varieties for these or those conditions he understands that the problem is not the varieties but the acute lags of technology behind the requirements of the variety and the contradictions between greatly advanced biological achievements and seriously lagging technology.

The main reason for our difficulties in grain production today involves technology rather than breeding.

In 1984 the Politburo of the CPSU Central Committee examined the question of increasing production of wheat grain on the basis of intensive technology and made the necessary decisions. We are speaking about the organization of the grain industry on a strict scientific basis, which includes the selection of the best predecessor, the best variety for the specific conditions, a sufficient quantity of organic and mineral fertilizer, the use of an integrated system for combatting diseases and pests, a precise technology when supplying it with technical resources, effective forms of labor organization and first and foremost--collective contracts.

In a word, labor productivity in the grain industry is a complicated problem. It must be dealt with systematically without forgetting a single element from among the complex and long chain of factors directed at both stable production growth and an economic consumption of live and reified labor.

[Question] But can you, Aleksandr Aleksandrovich, at least briefly discuss the contemporary state of breeding work? After all, our quite-recently celebrated wheat varieties developed by Krasnodar, Mironov and Saratov breeders played a large role in increasing the harvest. The development of these varieties is tied up with the names of our greatest breeders--P. P. Lukyanenko, V. N. Remeslo, M. I. Khadzhinova, V. N. Mamontov, V. P. Kuzmin and others. Evidently, intensive production requires new types of varieties. I would like to know about the cadres composition of our basic breeding centers. Does continuity exist and is there a real potential for the accelerated development of the necessary varieties of grain crops?

[Answer] Yes, you are right. The breeders whom you have mentioned were prominent scientists and great workers. They left a rich legacy and gave the country some excellent varieties. I must say that some of them, such as for example the renowned Bezostaya-1 wheat developed by P. P. Lukyanenko, have not left the fields even today. But time is moving onward and conditions change. It is true that the intensive stage of agricultural development requires new varieties. I have already said that during the 1970's breeding work was directed at developing short-stem varieties of the intensive type.

If we look at the organizational aspect, we will find that today the line that is being taken involves the creation of large breeding centers. In the past the breeder worked alone with one or two workers. Naturally the development of a variety took years and often decades. Now breeding work is collective in nature and the variety becomes the product of the labor not just of an entire

group of people but of representatives of different specialties. Working side by side with breeders in breeding centers we find specialists such as geneticists and cytologists, phytopathologists and entomologists, biochemists and plant physiologists, soil scientists, technologists, engineers and economists. Today we cannot work any other way. The variety must be not only productive but also resistant to unfavorable conditions in the environment, to diseases and to pests.

The work of breeding centers is now being oriented in this direction. In most of these centers collectives have been created. In some places this process is continuing.

The country and the world are aware of our older breeding centers--the Saratov, Krasnodar and Odessa centers. The leading lights of breeding work have died. Of course this is an irretrievable loss but the work is being carried on. Here are some examples. The successor to P. P. Lukyanenko, a young breeder and corresponding member of VASKhNIL, Yu. M. Puchkov, is successfully continuing the work of his teacher. With his direct participation and under his leadership several varieties of soft wheat suitable for cultivation according to intensive technology have already been developed and regionalized. He also developed the Polukarlikovaya-49 winter wheat variety, which has been regionalized in the Northern Caucasus and the southern Ukraine. Its potential productivity is 70-80 quintals per hectare. Working here is a talented breeder of barley and doctor of agricultural sciences, V. M. Shevtsov.

Breeders of the middle generation are working successfully in the country. First and foremost we must mention the Don scientists and VASKhNIL academician, I. G. Kalinenko, who developed a number of excellent varieties of winter wheat such as Donskaya Ostistaya, Zernogradka-2, Donskaya Polukarlikovaya, Novinka-2, Rostovchanka and a number of others. We can name Kurgan breeder V. Z. Lisich, Voroshilovgrad breeder A. M. Shevchenko, S. F. Lyfenko from Odessa, E. D. Nettevich from Nemichinovka near Moscow, N. A. Rodina from Kirov, V. I. Golovchenko from Kiev, V. A. Zykin from Omsk, V. K. Movchan from Shortanda and many others.

To our satisfaction, the leading lights of native breeding work, VASKhNIL academicians F. G. Kirichenko and D. A. Dolgushin in Odessa and G. S. Galeyev in the Kuban, are still working fruitfully.

Life requires that we develop varieties within a shorter period of time than before. We must bring them into the fields sooner. A very good method for rapidly multiplying the new variety has been developed in the Omsk Breeding Center; it has been widely implemented under Western Siberian conditions. In summarizing the aforementioned, contemporary and modern breeding work can be compared to the building of a house. Previously a small house could be built by one carpenter and two helpers. Today we need the cooperation of people from many professions--a stonemason, a crane operator, a sanitation technician and a parquet floor layer. This is a manifestation of the general laws of development which consist on the one hand of a division of labor and on the other of cooperation.

[Question] You spoke about the collective nature of the modern creative breeding process. Of course the corresponding higher educational institution or university will train the phytopathologist, the physiologist, the chemist, the physicist and the technologist for the collective breeding process, but who trains the breeder himself? How is he trained? After all, these are people with a specialty profession and it is no secret that not every agronomist can become a breeder. One needs talent as well. Doesn't this have to be taken into account? Is there a system for training cadres for breeding work that meets present-day requirements?

[Answer] Yes, this type of system does exist. First of all there are special divisions within agricultural departments of some large higher educational institutions such as the Moscow Agricultural Academy imeni K. A. Timiryazev, the Leningrad Agricultural Institute, the Kishinev Agricultural Institute and several others, totalling 14 higher educational institutions. Post-graduate study is available in a number of scientific-research institutes and higher educational institutions. The practice of internships both inside and outside the country exists. A system of upgrading training exists in the Timiryazev academy and in several other higher educational institutions. Every 5 years people are invited to refresh and add to their knowledge for 3-month periods. Moreover, seminars and courses and various professional meetings and conferences are offered. There is also a special press organ--the journal called SELEKTSIYA I SEMENOVODSTVO.

Does everything here correspond to present-day requirements? We feel that the level of training and retraining must be higher today.

[Question] Cadres of breeders are scientific cadres, but I feel that we cannot separate these scientific matters from the practice of seed farming when we are speaking about seed. What, in your opinion, is needed for the rapid transition of seed farming to an industrial base?

[Answer] First I would like to say something about breeders. In truth breeders are scholars, but they are scholars of a certain type. Breeding work requires great persistence, scrupulousness, fine powers of observation, precise record-keeping and limitless industriousness. Sometime in the early part of the last century one of the first Russian agronomists, M. G. Pavlov, in speaking about efficient agriculture, was asked the question, is agriculture a trade, an art or a science? He answered, "It is the lot of agriculture to be characterized by immobility like a trade, by blind success or a number of economic errors like art and by calculated success like science."

Of course we cannot limit ourselves to a hothouse, a laboratory or a plot of land--a variety comes to life only when it moves to the wide road of mass seed cultivation. Today this branch, like agriculture as a whole, is making a transition to an industrial base. And here too the person who is well-prepared and responsible and who likes his work will be a leader. The second component--the material-technical base--includes above all a drying industry, covered threshing floors and a selection of machines for cleaning, sorting and so forth. Finally, there is the large agricultural enterprise where this seed is cultivated.

Industrial seed farming, like breeding, lacks various types of cadres--not only agronomists-breeders who receive elite seed from breeding centers but also good technologists, organizers, engineers, economists, agrochemists and plant-protection specialists. These cadres are being trained in our higher educational institutions and are being improved and retrained in corresponding institutions and courses.

[Question] Thus, the variety is developed, the farming system has a scientific base and the technology for obtaining seed is elaborated. What characteristics do you feel an agronomist in an enterprise should have to ensure the production of a large quantity of high-quality grain under his leadership?

[Answer] All production must be of a high quality. We cannot limit ourselves to quantitative indicators alone. To some degree we are too concerned with the "gross" approach; we have counted quintals and hectares but did not demonstrate sufficient concern about the contents of this quintal, i. e. about protein in wheat, sugar in beets and so forth.

Here a great deal depends on the agronomist. What is today's agronomist like?

The agronomist is commonly referred to as a field technologist. In principle this is correct, but in reality an agronomist is not always a field technologist in the full sense of the word. Frequently he is reduced to everyday activities, to all kinds of details, to individual agrotechnical methods while forgetting the most important thing--the end product with its qualitative and quantitative indicators.

Above all the agronomist must know the life of the field in general. Our fellow countryman, agronomist A. G. Doyarenko, was a classic example of this. In his short but very detailed work, "The Life of the Field," he demonstrates with great skill all of the complexity and diversity of biological, physical and other processes that occur in the top layer of soil.

I would like to say that in the course of specialization many contemporary professions within the agricultural sphere have branched out of the universal agronomist--economist, zooengineer, reclamation worker, agricultural-forestry reclamation worker, engineer and others. The leading lights of native agronomic science, such as A. T. Bolotov, A. S. Yermolov, I. A. Stebut and others, were not just agronomists but also economists and it is even difficult to say what there is more of in their work--pure agronomy or agro-economics.

By all of this I would like to say that the modern agronomist must have a broad orientation, must have the ability to think systematically and to incorporate all of the multi-faceted, complex biological, technological, economic and social processes on which modern agriculture is built.

One further point. The modern agronomist must have a creative approach to work and unoriginality and routine must be alien to him. After all, agriculture itself is regional. The configuration of objective conditions, under which it is carried out, is unique and nothing probably brings more harm than excessive organization and routine decisions. Here we must take into

account not only soil characteristics and the availability of resource potential but changing weather conditions and growing demandingness as concerns quality and quantity of production as well. All of this must be encompassed. When we speak of production forces we cannot forget that the main, basic production force at any level of development of technology and science has always been and will always be the individual. For this reason, we must keep in individual in mind in any matter.

Contemporary practice is rich in examples of the activities of noteworthy agronomists. I personally know many of them in different regions of the country. Those people who achieve success under difficult natural conditions with a shortage of resources and in spite of natural calamities are worthy of special respect. I would like to bring up three names. All three are agronomists in enterprises--Nikolay Georgiyevich Kovalev, Fedor Akimovich Ivashchenko and Ivan Kirillovich Okhrimenko. All three work under the conditions of a severe, dry Stavropol steppe. With their active participation a system of stable dry farming has been developed. These people are friends of science and they are constantly doing research. They are agronomists with a broad orientation. They know how to evaluate all factors and how to calculate expenditures. For their participation in the development and implementation of measures on the stable development of the grain industry they recently were honored with the title of recipient of the Prize of the USSR Council of Ministers.

These people are not unique; others like them exist in practically every oblast, republic and rayon. They must be supported and trusted; their initiative must be developed.

In conclusion I would like to return to that with which our conversation began. Intensifying public production, increasing its effectiveness by means of growth in labor productivity and implementing the Food Program are the fundamental directions for the party's economic policies. This was emphasized once again in K. U. Chernenko's speech to the Politburo of the CPSU Central Committee on 15 November 1984. Undoubtedly, cadres of agricultural science will continue to work with a high degree of responsibility and understanding of their duty in order to make their contribution to completing the five-year plan and to accelerating the intensification of the economy.

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CSO: 1824/123

TILLING AND CROPPING TECHNOLOGY

BRIEFS

EAST KAZAKHSTAN BUCKWHEAT--Buckwheat occupies 32,000 hectares in East Kazakhstan Oblast. This year farms in the region have obligated themselves to obtain average yields in the 12-14 quintal per hectare range and sell the state several fold more buckwheat than called for by the plan. The harvest of this groat crop is now fully under way in Bolshenarymskiy, Glubokovskiy, Tavricheskiy and Shemonaikhinskiy rayons. More than 1,100 hectares are planted to buckwheat at the Yaroslavskiy Sovkhoz. In 7 days machinery operators in the third department, led by Stepan Kazakov, cut 607 hectares and began to harvest them. The communist Kanykpay Dzhakupov is setting an example for the young combine operators V. Strikhalov and V. Latshkin. Machinery operators at the Kolkhoz imeni Kirov in Glubokovskiy Rayon are rapidly harvesting buckwheat. Specialists have determined that each of the 600 hectares should yield 20 quintals of grain. Last year the kolkhoz sold the state 12,000 quintals of buckwheat and does not intend to do worse this year [By P. Shchuplov, special correspondent] [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian] 26 Sep 85 p 1] 11574

PAVLODAR MILLET HARVEST--Pavlodar--High crop production standards and precise work organization have become a guarantee for high millet yields in the arid steppes of Mayskiy Rayon, Pavlodar Oblast. Having completed the harvest of groat crops, farmers successfully fulfilled their socialist obligations for the year. The state's granary has received 35,000 tons of grain, more than twice the planned figure [TASS] [Text] [Moscow SELSKAYA ZHIZN in Russian 28 Sep 85 p 1] 11574

GOOD HARVEST IN PAVLODAR--Pavlodar--The processing of groat crops is actively under way at threshing floors of sovkhoses and kolkhoses and procurement enterprises in the oblast. Plans call for delivering 86,000 tons of millet and 21,000 tons of buckwheat to the state. These are large volumes. Having grown a fairly good harvest, farmers are fully resolved to fulfill their obligations. The competition is led by workers in Mayskiy Rayon, who have already sent 38,000 tons of groats to elevators. This is twice the plan. Deliveries of the valuable food grains are continuing. [By V. Savelev] [Text] [Moscow SELSKAYA ZHIZN in Russian 17 Oct 85 p 1] 11574

NEW TATAR BUCKWHEAT VARIETY--Natalya Nikolayevna Petelina, an agronomist and plant breeder at the Tatar Scientific Research Institute for Agriculture,

calls her latest buckwheat variety "Kazanskaya Krupnozernaya". The master of Aznakayevskiy Rayon was one of the first in the republic to test the new variety. Last year it produced more than 15 quintals per hectare. Express-commentary of F. Mingazov, the chief agronomist of the Tatar ASSR Ministry of Agriculture: Natalya Nikolayevna has given farmers an excellent variety. The "Kazanskaya Krupnozernaya", which she has bred responds to care and has been planted. Its grain is really large, the vegetative growth period is short and the marketability high. This year the new variety will occupy 8,000 hectares in the republic. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 4 Apr 84 p 2] 11574

CSO: 1824/116

FORESTRY AND TIMBER

RATIONAL USE OF TOMSK OBLAST TIMBER WASTE, FOLLOW-UP

Complete Processing of Wood Raw Materials

Moscow EKONOMICHESKAYA GAZETA in Russian No 40, Oct 85 p 11

/Article by B. Sidorenko, Tomsk Oblast: "Thrifty Use of Forest Resources"/

/Text/ In speaking before a meeting of the party-economic aktiv for Tyumen and Tomsk oblasts, M.S. Gorbachev emphasized that work concerned with the use of timber is proceeding worst of all. The amount of final product being obtained from a cubic meter of wood procured in Siberia is two times less than the figure for the country as a whole.

More than one half of Tomsk Oblast is covered by forest. Its green wealth consists of Siberian cedar and fir, spruce, pine, birch and aspen.

Naturally, the timber industry occupies a worthy place in the oblast's economic structure. In all, 6,350,000 cubic meters of wood are procured annually. A considerable amount is also processed here. What can be said regarding the annual waste materials of the forest?

"In our case, they are still rather great and exceed 1 million cubic meters," replied the chief of the Tomlesprom Association V. Shutov.

As you can see, one sixth of the amount being procured is for all practical purposes still not being used. This means that a more energetic search must be launched for opportunities for processing increased quantities of wood waste materials.

A search is underway today at enterprises of Tomlesprom for methods for reducing the quantities of waste materials in the timber industry.

First of all, importance is being attached to concentrating the wood dressing work and having it carried out not so much at lower riverside timber yards, but rather at large specialized production installations. This fact is well understood within Tomlesprom. Large centers for the dressing of wood are already in operation today -- Tomsk and Asino timber complexes, where approximately one and a half million cubic meters of tree length logs (trunks with branches removed) are being processed. Similar points for the complete processing of wood are also being created at the Togur Timber Industry Combine and at the Mogochin Timber Plant.

The processing of waste materials into technological chips is being facilitated considerably at such points. At Tomsk, for example, a chipboard panel plant has become an active consumer of technological chips.

It is obvious however that large quantities of waste materials still remain at the timber procurement sites and at riverside timber yards. How can they be processed into chips? Experience has shown that the use of mobile cutting machines is most effective here. Such a machine approaches a pile of branches, processes them and thereafter loads the processed materials into a chip carrier.

This production line is already being used in the Tomsk forests. Unfortunately however, the mobile cutting machines and chip carriers are not being made available here in sufficient numbers. It is believed that Minlesbumprom /Ministry of the Timber, Pulp and Paper and Wood Processing Industry/ should solve as rapidly as possible the problem concerned with ensuring that the timber procurement specialists are supplied with this much needed resource-conserving equipment.

"During a seminar in Rostov-na-Donu, organized recently at the Yugmebel Association and discussed in EKONOMICHESKAYA GAZETA, valuable experience in the use of a waste-free technology and in the efficient use of wood was presented," stated V. Shutov "In the treeless regions there a search is underway to learn where the materials can be obtained, while our problems have to do with how they are to be delivered."

Within the association, thought is being given to a system for delivering the chips to the consumption areas. Documentation is being prepared for organizing a station at the Asinov Timber Industry Complex for accepting chips from rail-served timber industry enterprises. This is particularly important in view of the fact that the Asinov Fibreboard Panel Plant is by no means operating at full capability. Although its planned capability is 25 million square meters of panels, its production is still only 17 million square meters. Thus chips are still available for use in some areas.

In this regard, special urgency is being attached to the problem of chip deliveries from timber industry enterprises which are not rail-served. This problem can be solved by shipping the chips over rivers in barges. But once again the Minrechflot /Ministry of the River Fleet/ has not allocated even one barge for this purpose.

"For a start, we would like at least five such barges" state the timber procurement specialists. "We could then include in the chip processing production line the Togur Combine and the Mogochin Timber Plant, where chips can be procured today in large quantities."

It is hoped that the river workers will respond in an efficient manner to this request.

A considerable reserve for achieving a savings is that of using the wood waste materials for fuel, as a result of which the requirements for coal would be reduced. For example, boilers in Togur and Mogochin are being operated on the

basis of wood waste materials. Last year, at the Togur Combine alone, approximately 200,000 cubic meters of waste materials were used for this purpose and this resulted in a considerable reduction in the use of coal.

But this valuable experience is still being disseminated very weakly. Thus a program is being followed today within the association aimed at converting boilers over from coal to the burning of timber procurement waste materials. Over a five-year period, as a result of this conversion, a savings of 4,900 tons of coal is expected at the Beloyarsk LPK /lumber industry complex/, almost 2,000 tons at the Kargasok LPK and more than 13,000 tons for the association as a whole. The conversion over to the use of wood waste materials of small boilers at timber industry enterprises which consume rather large quantities of coal requires special concern and control on the part of the association.

Although wood waste materials are today being used for fuel purposes, this is still not considered to be the best method for their use. As emphasized during the party and economic aktiv for Tyumen and Tomsk oblasts, the chief concern is to increase the production of final products, including products made from wood waste materials.

Within the association, I was furnished with the following figures: as a result insufficient attention being given to the processing of waste materials, up to 100,000 cubic meters of technological chips are being lost annually -- the equivalent of one and a half million rubles worth of marketable output.

The timber procurement specialists consider their chief reserve to be that of increasing the processing volumes for wood and its waste materials in the various areas and producing diverse types of products based upon their use. The capabilities of the lumber and sleeper-sawing and packaging production operations are being modernized. For example, the Togur and Kopylovskiy sleeper plants are being modernized, together with the complete replacement of fixed capital. Before long, construction will commence on the Ob and Tomsk packaging departments. Automation in the grading of sleepers and the introduction of automatic grading of boards at all of the association's timber plants will promote an increase in the production volumes. The initiator of this was the sleeper-cutting and sawmill department of the Tomsk LPK, where an all-union school for leading experience has been created.

Here I would like to touch upon still another problem which is holding back an increase in the production volumes for products made from wood. Under the pretext of concern for the efficient use of freight cars, the MPS /Ministry of Railroads/ is presently accepting for shipment purposes timber materials measuring from 4 to 6 meters. But indeed the needs of the consumers are greater than this. And to what degree should the length of the timber be limited for shipment -- this places a serious obstacle in the path of more efficient use of wood.

Employing specific measures, the association is striving to respond to the appeal by the party to intensify the thrift regime. And here the most important reserve is that of achieving more complete use of wood waste materials and increasing the production of final products.

Among the reserves available for increasing the production of final products, it is difficult to exaggerate the importance of increasing the production of goods of a cultural-domestic and economic nature. At the present time, 120,000 pairs of skis are being produced in the oblast annually. But the potential for expanding the production of consumer goods is still quite great. At timber processing enterprises, the plans call for mastering the production of parquet, floor tiles, cooper's packaging materials, birchbark dishware and various construction components. Thus, the decision has been made to create in the very near future appropriate capabilities at the Togursk and Beloyarsk LPK's.

Over the next five years, the association's enterprises expect to increase the production of consumer goods by almost twofold.

Utilization of Wood Waste Materials

Moscow EKONOMICHESKAYA GAZETA in Russian No 48, Nov 85 p 20

/Article by G. Medvedev, deputy minister of the timber, pulp and paper and wood processing industry/

/Text/ In response to the article entitled "Thrifty Use of Forest Resources." (Issue No. 40):

USSR Minlesbumprom /Ministry of the Timber, Pulp and Paper and Wood Processing Industry/ believes that the need for complete processing of wood raw materials in Tomsk Oblast was stated correctly in the article.

For the 12th Five-Year Plan, the ministry has established a task for Tomlesprom in connection with the use of the waste materials of timber procurements, including for fuel-energy needs, for the production of chips and for wood paneling. The plans also call for deliveries of sawdust to enterprises of the microbiological industry. Deliveries of equipment to the association will be increased for the purpose of carrying out this task.

Large boilers at a number of timber industry enterprises will commence using chips instead of trunk wood in 1986-1988.

The association plans to organize a permanently active all-round enterprise for the reproduction of forests and for the procurement and complete processing of wood.

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